

IN THE CLAIMS:

Please add new claims 192-208 as indicated below. The complete listing of the claims and their status that follows supercedes and replaces all prior listings

Claims 1-97 (cancelled)

98. (previously added) A method of providing interbody fusion between two vertebral bodies of the spine, comprising the steps of:
accessing the intradiscal space between two generally opposed vertebral bodies; and
consecutively introducing a plurality of elements in contact with each other generally in the direction of the axis of the spine between the opposed vertebral bodies to distract and support such vertebral bodies along the axis of the spine until stability of the vertebral bodies is substantially achieved.

99. (previously added) The method of claim 98 wherein said elements are introduced by moving at least one element to a different position upon introduction of a subsequent element.

100. (previously added) The method of claim 99 wherein said at least one element is moved by contacting a surface thereof with a surface of said subsequent element.

101. (previously added) The method of claim 100 wherein the accessing step includes the step of placing an elongated access channel in communication with the space between said vertebral bodies and introducing the elements through said channel.

102. (previously added) The method of claim 101, further including the step of providing a bone filler in contact with the elements.

103. (previously added) The method of claim 100 wherein said elements are wafers, said wafers being introduced between said vertebral bodies by stacking one wafer atop another wafer.

104. (previously added) The method of claim 98, wherein said space between said vertebral bodies is accessed by an approach selected from the group of procedures consisting of anterior, posterior, posterior lateral and extrapedicular.

105. (previously added) The method of claim 98, further including the step of providing an outer member and introducing said elements into said member.

106. (previously added) The method of claim 98, wherein said elements have arcuate contact surfaces.

107. (previously added) The method of claim 98, wherein said elements have generally flat contact surfaces.

108. (previously added) A method of providing interbody fusion between two vertebral bodies of a spine, comprising the steps of:
accessing the intradiscal space between two generally opposed vertebral bodies; and
stacking a plurality of wafers in the direction of the axis of the spine between the opposed vertebral bodies to distract and support such vertebral bodies along the axis of the spine until stability of the vertebral bodies is substantially achieved.

109. (previously added) The method of claim 108, wherein said wafers are stacked by consecutively inserting said wafers one atop the other to form a column extending in the direction of the axis of the spine.

110. (previously added) The method of claim 109, wherein said wafers are consecutively inserted in a direction substantially normal to the axis of the spine.

111. (previously added) The method of claim 110, wherein said wafers are consecutively inserted by slidably moving one wafer along a surface of another wafer.

112. (previously added) The method of claim 111, including the step of inserting between the vertebral bodies an elongated guide track along which the wafers travel during insertion.

113. (previously added) The method of claim 112, including the step of inserting each wafer subsequent to the first wafer between the next preceding wafer and a base.

114. (previously added) The method of claim 113, wherein the base is the guide track.

115. (previously added) The method of claim 113, wherein the base is a wafer adjacent the next preceding wafer.

116. (previously added) The method of claim 113, wherein the wafers have leading and trailing beveled ends, the method comprising the step of engaging the leading beveled end of one wafer with the trailing beveled end of the next preceding wafer to enable the one wafer to be inserted between the guide track and the next preceding wafer to thereby urge the preceding wafer away from the guide track in the direction of the spine.

117. (previously added) The method of claim 109, wherein one or more of the wafers have filler-receiving orifices, the method including the step of providing the fluent bone filler in the orifices.

118. (previously added) The method of claim 111, wherein the accessing step includes the step of inserting between the vertebral bodies an elongated access channel through which said wafers are inserted.

119. (previously added) The method of claim 112, wherein the accessing step includes the step of inserting between the vertebral bodies an elongated access channel having collapsible and expandable configurations, the method including the steps of inserting the access channel in its collapsed configuration between the vertebral bodies and then expanding the access channel between the vertebral bodies laterally of its length and in a direction generally normal to the direction of the spine to enable the access channel to receive the guide track therewithin.

120. (previously added) The method of claim 117 including the step of providing a membrane around the wafer column to control the flow of filler on and into said wafer column.

121. (previously added) The method of claim 108, wherein said accessing step includes the step of removing a portion of the disc annulus and at least a portion of the disc nucleus.

122. (previously added) The method of claim 121, wherein said step of removing a portion of the disc annulus comprises providing an opening through said annulus.

123. (previously added) The method of claim 109, further comprising the step of preparing the endplates of opposing vertebral bodies to expose bleeding bone.

124. (previously added) The method of claim 109, wherein said accessing step comprises an anterior approach.

125. (previously added) The method of claim 109, wherein said accessing step comprises a posterior approach.

126. (previously added) The method of claim 125, wherein said accessing step further comprises the provision of stacking two columns of wafers side by side.

127. (previously added) The method of claim 126, wherein wafers are inserted alternatively between the two columns.

128. (previously added) The method of claim 118, wherein said accessing step comprises a posterior-lateral approach.

129. (previously added) The method of claim 128, wherein the accessing step further comprises the preparation of an opening in the disc annulus and advancing said access channel to the annulus opening for insertion of the wafers therethrough.

130. (previously added) The method of claim 118, wherein said accessing step comprises an extra-pedicular approach.

131. (previously added) The method of claim 130, wherein the accessing step further comprises the preparation of an opening in the disc annulus through the wall of an adjacent vertebral body and advancing said access channel to said opening for insertion of the wafers therethrough.

132. (previously added) An interbody fusion device for the distraction and support of opposing vertebral bodies in a spine at a selected spacing between said vertebral bodies, comprising a plurality of elements in cooperative contact forming a structure between said opposing vertebral bodies generally extending in the direction of the axis of the spine, said structure being formed by the consecutive receipt of said elements between said opposing vertebral bodies to the selected spacing between said vertebral bodies.

133. (previously added) The interbody fusion device of claim 132, wherein each element has an interface, the interfaces of elements in contact being configured to provide said cooperative contact.

134. (previously added) The interbody fusion device of claim 133, wherein said interfaces are configured to provide unconstrained degrees of cooperative contact.

135. (previously added) The interbody fusion device of claim 133, wherein said interfaces are configured to provide semi-constrained selective degrees of cooperative contact.

136. (previously added) The interbody fusion device of claim 133, wherein said interfaces are configured to provide constrained degrees of cooperative contact.

137. (previously added) The interbody fusion device of claim 133, wherein said interfaces are arcuate.

138. (previously added) The interbody fusion device of claim 137, wherein said arcuate surfaces are generally cylindrical.

139. (previously added) The interbody fusion device of claim 137, wherein said arcuate surfaces are generally spherical.

140. (previously added) The interbody fusion device of claim 133, wherein said interfaces are generally flat.

141. (previously added) The interbody fusion device of claim 140, wherein said structure is defined by a plurality of wafers each having said generally flat interfaces, one wafer being disposed atop another wafer to form said structure.

142. (previously added) An interbody fusion device for the distraction and support of opposing vertebral bodies in a spine comprising a plurality of stackable wafers cooperatively forming a column generally in the direction of the axis of the spine between said two opposing vertebral bodies, the wafers each having a contact surface, a contact surface of one wafer being slidably receivable on a contact surface of another wafer in a sliding direction generally normal to the axis of the spine.

143. (previously added) The interbody fusion device according to claim 142, wherein a stackable wafer comprises a single wafer.

144. (previously added) The interbody fusion device according to claim 142, wherein a stackable wafer comprises multiple wafers.

145. (previously added) The interbody fusion device of claim 142, wherein one or more wafers are curved in a plane generally normal to the direction of the axis of the column.

146. (previously added) The interbody fusion device of claim 142, wherein one or more wafers are of non-uniform thickness.

147. (previously added) The interbody fusion device of claim 142, wherein each wafer has a length and a width and wherein one or more wafers increases in thickness along the wafer length such that the one or more wafers are configured as a wedge.

148. (previously added) The interbody fusion device of claim 142, wherein the wafer contact surfaces are provided with complementary configurations to restrain the wafers from slipping out of the column.

149. (previously added) The interbody fusion device of claim 148, wherein the complementary configurations are complementary ridges and grooves.

150. (previously added) The interbody fusion device of claim 149, wherein the complementary ridges and grooves have dovetail ridge and groove configurations.

151. (previously added) The interbody fusion device of claim 148, wherein the complementary configurations are configured to enable the wafers to rotate in a plane normal to the given direction while remaining in the column.

152. (previously added) The interbody fusion device of claim 148, wherein the complementary configurations comprise detent configurations so configured as to restrain any lateral movement between adjacent wafers in a column.

153. (previously added) The interbody fusion device of claim 148, wherein the complementary configurations comprise a cylindrical indent.

154. (previously added) The interbody fusion device of claim 148, wherein the complementary configurations comprise a spherical indent.

155. (previously added) The interbody fusion device of claim 148, wherein the wafer contact surfaces are configured to permit limited rotation of one wafer with respect to another wafer about an axis parallel to the sliding direction.

156. (previously added) The interbody fusion device of claim 142, wherein the wafers comprise a dovetail and a cylindrical indent to constrain all degrees of freedom.

157. (previously added) The interbody fusion device of claim 142, wherein the wafer contact surfaces have cylindrical interfaces to provide axial translation along the axis of the cylinder and rotational movement about the radius of the cylinder.

158. (previously added) The interbody fusion device of claim 142, wherein the wafers have spherical interfaces.

159. (previously added) The interbody fusion device of claim 142, further including a pin for locking the wafers in place.

160. (previously added) The interbody fusion device of claim 142, wherein each wafer has a leading edge, a trailing edge, and two lateral edges, the wafer further including a lip formed along a bottom surface for limiting axial travel of a subsequent wafer.

161. (previously added) The interbody fusion device of claim 160, wherein the lip extends along all edges of the bottom surface except for the trailing edge.

162. (previously added) The interbody fusion device of claim 160, wherein the lip extends along the leading edge of the bottom surface.

163. (previously added) The interbody fusion device of claim 160, wherein the lip extends along the lateral edges of the bottom surface.

164. (previously added) The interbody fusion device of claim 142, wherein the wafers are marked with a radio-opaque material for observation under fluoroscopy.

165. (previously added) The interbody fusion device of claim 142 wherein each wafer has a length and a width and wherein the wafer defining the bottom wafer in said column has a length larger than at least one other wafer in said column.

166. (previously added) The interbody fusion device of claim 142 wherein each wafer has a length and a width and wherein the wafer defining the top wafer in said column has a length larger than at least one other wafer in said column.

167. (previously added) The interbody fusion device of claim 166 wherein said wafer defining said bottom wafer in said column has a length larger than at least one other wafer in said column.

168. (previously added) The interbody fusion device of claim 142 wherein said wafers comprise implant materials.

169. (previously added) The interbody fusion device of claim 168, wherein one or more wafers have at least one orifice for receiving a filler material therein.

170. (previously added) The interbody fusion device of claim 168, wherein said wafers further comprise osteoinductive agents.

171. (previously added) The interbody fusion device of claim 168, wherein said wafers further comprise a drug therapy.

172. (previously added) The interbody fusion device of claim 142 further including an outer member covering at least a portion of such wafer column.

173. (previously added) The interbody fusion device of claim 172, wherein said outer member is permeable

174. (previously added) The interbody fusion device of claim 173, wherein said permeable outer member comprises a material of macro-porosity.

175. (previously added) A kit for use in interbody fusion of vertebral bodies in a spine, comprising;

an interbody fusion device adapted to comprise a plurality of insertable wafers of various thickness; and

a wafer inserter for inserting wafers between said vertebral bodies, said wafer inserter being adapted to selectively insert consecutive wafers of the same or different thicknesses between said vertebral bodies to thereby form a column of wafers between said vertebral bodies.

176. (previously added) The kit of claim 175 wherein a stackable wafer of a given first thickness comprises a single wafer.

177. (previously added) The kit of claim 175 wherein a stackable wafer of a given second thickness comprises multiple wafers.

178. (previously added) A method of treating a spine having a plurality of vertebral bodies, comprising consecutively introducing into the spine a plurality of elements in contact with each other generally in the direction of the axis of the spine between two vertebral bodies to support such vertebral bodies along the axis of the spine.

179. (previously added) The method of claim 178, wherein said elements are wafers configured for stacking one atop another.

180. (previously added) The method of claim 178, wherein said elements are introduced by moving at least one element to a different position in the direction of the axis of the spine upon introduction of a subsequent element.

181. (previously added) The method of claim 180, wherein said elements are introduced by sliding one element along a surface of another element.

182. (previously added) The method of claim 178, further comprising the step of introducing a bone filler material between the opposing endplates in contact with said plurality of elements.

183. (previously added) The method of claim 182, wherein the step of introducing said bone filler material includes introducing the material between adjacent ones of said plurality of elements.

184. (previously added) The method of claim 182, wherein the step of introducing said bone filler material includes introducing the material about the plurality of elements.

185. (previously added) The method of claim 178, wherein said elements are introduced in a manner to simultaneously distract and support said vertebral bodies.

186. (previously added) The method of claim 178, further comprising the step of providing a bone filler in contact with elements and said vertebral bodies to promote fusion between said vertebral bodies.

187. (previously added) A kit for use in interbody fusion of vertebral bodies in a spine, comprising;

a plurality of wafer stacks of various thicknesses adapted to form a column between opposing vertebral bodies; and

a wafer inserter for inserting said plurality of wafer stacks between said vertebral bodies, said wafer inserter being adapted to selectively insert consecutive wafer stacks of the same or different thicknesses between said opposing vertebral bodies of the vertebral bodies to thereby form said column of wafers between said vertebral bodies.

188. (previously added) The kit of claim 187, wherein at least a number of said plurality of wafer stacks include only one wafer.

189. (previously added) The kit of claim 187, wherein at least a number of said plurality of wafer stacks include more than one wafer.

190. (previously added) A kit for use in interbody fusion of vertebral bodies in a spine, comprising;

a plurality of elements adapted for contact with each other; and

an inserter for consecutively inserting a plurality of elements between said vertebral bodies in a manner such that such elements are placed in contact with each other in a direction generally extending along the axis of the spine.

191. (previously added) The kit of claim 190, further including bone filler.

192. (new) A method of providing spinal interbody fusion, comprising the steps of:
accessing the intradiscal space between two generally opposed upper and lower vertebral bodies;

providing an expandable structure comprising a top element, a bottom element and an intermediate element, said top element being configured to contact the upper vertebral body, said bottom element being configured to contact the lower vertebral body, and said intermediate element configured to reside between said top element and said bottom element;

introducing said top element and said bottom element into said intradiscal space; and,

introducing said intermediate element between and in contact with said top element and said bottom element to relatively move said top element and said bottom element apart generally along the axis of the spine as said intermediate element is introduced to thereby distract and support said upper and lower vertebral bodies.

193. (new) The method of claim 192, wherein said intermediate element is introduced by sliding between said top element and said bottom element.

194. (new) The method of claim 192, wherein the intermediate element is configured for interlocking coupling with at least said top element.

195. (new) The method of claim 192, wherein the intermediate element is configured for interlocking with said bottom element.

196. (new) The method of claim 192, wherein the top element has an area greater than the intermediate element.

197. (new) The method of claim 196, wherein the bottom element has an area greater than the intermediate element.

198. (new) The method of claim 192, wherein the step of introducing said intermediate element includes sliding a plurality of intermediate elements between the top element and the bottom element.

199. (new) An expandable device for use in spinal interbody fusion, said device being configured for insertion in the disc space between two opposing vertebral bodies comprising:
a top element for contacting an upper vertebral body;
a bottom element for contacting an opposing lower vertebral body; and
an intermediate element having a configuration for sliding insertion between said top element and said bottom element in a first direction and for causing said top element and said bottom element to be relatively spaced apart in a direction generally transverse to said first direction, whereby said top element is adapted to contact said upper vertebral body and said bottom element is adapted to contact said lower vertebral body to distract and support said opposing vertebral bodies.

200. (new) The expandable device of claim 199, wherein said intermediate element comprises an interlock for coupling with said top element.

201. (new) The expandable device of claim 200, where said intermediate element comprises an interlock for coupling with said bottom element.

202. (new) The expandable device of claim 199, wherein said intermediate element includes an angled insertion end.

203. (new) The expandable device of claim 199, wherein said top element has an area greater than the intermediate element.

204. (new) The expandable device of claim 203, wherein said bottom element has an area greater than the intermediate element.

205. (new) The expandable device of claim 199, wherein said intermediate element comprises a plurality of intermediate elements.

206. (new) The expandable device of claim 199, wherein said intermediate element comprises a generally flat wafer.

207. (new) The expandable device of claim 206, wherein said intermediate element comprises plurality of flat wafers, each said wafer being configured for forming a stack of wafers between said top element and said bottom element.

208. (new) The expandable device of claim 207, wherein said plurality of wafers and said top element and said bottom element are all configured to be substantially the same size.